IN THE CLAIMS

1. (Currently amended) A method of forming an optical component, comprising:

forming a mask over a light transmitting medium so as to protect a region of the light transmitting region where a waveguide is to be formed; and

applying an etching medium to the light transmitting medium so as to form one or more waveguide surfaces with a smoothness less than 220 nm, the etching medium [including] consisting of a fluorine containing gas and a partial passivant, the partial passivant being[one or more partial passivants] selected from the group consisting of [SiF_4,] C_4F_8, CH_2F_2 and CHF_3.

2. (Previously presented) The method of claim 1, wherein the fluorine containing gas includes SF_6 and the partial passivant includes CHF_3.

3. (Previously presented) The method of claim 1, wherein the fluorine containing gas includes SF_6 and the partial passivant includes C_4F_8.

4. Canceled.

5. (Previously presented) The method of claim 1, wherein the fluorine containing gas is selected from a group consisting of SF_6, Si_2F_6 and NF_3.

6. (Previously presented) The method of claim 1, wherein the partial passivant is selected from a group consisting of C_4F_8 and CHF_3.

7. (Previously presented) The method of claim 1, wherein the one or more surfaces includes a sidewall of the waveguide.

8. (Previously presented) The method of claim 1, wherein the one or more surfaces include a waveguide facet.

9. (Previously presented) The method of claim 1, wherein the etching medium is applied at a pressure of 1 mTorr to 600 mTorr.

10. (Previously presented) The method of claim 1, wherein the etching medium is applied at a pressure of 1 mTorr to 60 mTorr.

11. (Previously presented) The method of claim 1, wherein the etching medium is applied at a pressure of 10 mTorr to 30 mTorr.

12. (Previously presented) The method of claim 1, wherein the etching medium includes one or more other media.

13. (Currently amended) The method of claim 12 [1], wherein the one or more other media is selected from the group consisting of SiF_4 and SiF_6

14. (Currently amended) The method of claim 12 [1], wherein the one or more other media include a noble gas.

15. (Previously presented) The method of claim 1, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of 0.1:1 to 100:1.

16. (Previously presented) The method of claim 1, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of .5:1 to 10:1.

17. (Previously presented) The method of claim 1, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of 1:1 to 2:1.

18. (Currently amended) The method of claim 1, wherein the mask is formed so as to protect a region of the light transmitting region where a plurality of waveguides are to be formed and the etching medium is applied so [to] as to form one or more surfaces on at least one of the waveguides.

19. (Previously presented) The method of claim 1, wherein the mask is an oxide mask.

20. (Previously presented) The method of claim 1, wherein the mask is a photoresist.

21. (Previously presented) The method of claim 1, wherein the etching medium is applied in an inductively coupled plasma etch.

22. (Currently amended) A method of forming an optical component, comprising:

obtaining an optical component having a light transmitting medium positioned over a base; and

applying an etching medium to the light transmitting medium so as to form one or more waveguide surfaces with a smoothness less than 220 nm, the etching medium including $\underline{Si_2F_6}$ and one or more partial passivants [and a fluorine containing gas selected from a group consisting of Si_2F_6 and NF_3].

23. (Currently amended) The method of claim 22, wherein the [the] partial passivant includes CHF_3.

24. (Previously presented) The method of claim 22, wherein the partial passivant includes C_4F_8.

25. (Previously presented) The method of claim 22, where the etching medium excludes oxygen.

26. (Previously presented) The method of claim 22, wherein the fluorine containing gas includes NF_3.

27. (Previously presented) The method of claim 22, wherein the partial passivant is selected from a group consisting of HBr, SiF_4, C_4F_8, CH_2F_2 and CHF_3.

28. (Previously presented) The method of claim 22, wherein obtaining the optical component includes receiving the optical component from a supplier.

29. (Previously presented) The method of claim 22, wherein the etching medium is applied at a pressure of 1 mTorr to 200 mTorr.

30. (Currently amended) The method of claim 22, wherein the etching medium is applied at a pressure of [,] 5 mTorr to 60 mTorr.

31. (Previously presented) The method of claim 22, wherein the etching medium includes a second fluorine containing gas selected from the group consisting of SiF_4 and SiF_6.

32. (Previously presented) The method of claim 22, wherein the etching medium also includes a noble gas.

33. (Previously presented) The method of claim 22, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas less than 100:1.

34. (Previously presented) The method of claim 22, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of about .5:1 to 10:1.

35. (Previously presented) The method of claim 22, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of about 1:1 to 2:1.

36. (Currently amended) The method of claim 22, wherein [the] a mask is formed so as to protect a region of the light transmitting region where a plurality of waveguides are to be formed and the etching medium is applied to as to form one or more surfaces on at least one of the waveguides.

37. (Previously presented) The method of claim 22, wherein the etching medium is applied so as to form at least one surface on a plurality of waveguides.

38. Canceled.

39. (Previously presented) The method of claim 22, wherein the etching medium is applied in an inductively coupled plasma etch.

40. (Previously presented) The method of claim 1, wherein the etchant is applied so as to form the one or more waveguide surfaces with a smoothness less than 50 nm.

41. (Previously presented) The method of claim 22, wherein the etchant is applied so as to form the one or more waveguide surfaces with a smoothness less than 50 nm.

42. (New) The method of claim 1, wherein the fluorine containing gas is SF_6.

43. (New) The method of claim 1, wherein the one or more surfaces are formed in a single etch step.

44. (New) The method of claim 1, wherein the etching medium is applied continuously during formation of the one or more surfaces.

45. (New) The method of claim 1, wherein conditions under which the etching medium is applied remain constant during the formation of the one or more surfaces.

46. (New) The method of claim 1, wherein a pressure at which the etching medium is applied remains constant during the formation of the one or more surfaces.

47. (New) A method of forming an optical component, comprising:

forming a mask over a light transmitting medium so as to protect a region of the light transmitting region where a waveguide is to be formed; and

applying an etching medium to the light transmitting medium so as to form one or more waveguide surfaces with a smoothness less than 220 nm, the etching medium consisting of SF_6, a

partial passivant and one other medium, the partial passivant being selected from the group consisting of SiF_4, C_4F_8, CH_2F_2 and CHF_3.

48. (New) The method of claim 47, wherein the fluorine containing gas is SF_6 and the partial passivant is CHF_3.

49. (New) The method of claim 47, wherein the fluorine containing gas is SF_6 and the partial passivant is C_4F_8.

50. (New) The method of claim 47, where the etching medium excludes oxygen.

51. (New) The method of claim 47, wherein the fluorine containing gas is selected from a group consisting of SF_6, Si_2F_6 and NF_3.

52. (New) The method of claim 47, wherein the partial passivant is selected from a group consisting of C_4F_8 and CHF_3.

53. (New) The method of claim 47, wherein the one or more surfaces includes a sidewall of the waveguide.

54. (New) The method of claim 47, wherein the etching medium is applied at a pressure of 1 mTorr to 600 mTorr.

55. (New) The method of claim 47, wherein the etching medium is applied at a pressure of 1 mTorr to 60 mTorr.

56. (New) The method of claim 47, wherein the etching medium is applied at a pressure of 10 mTorr to 30 mTorr.

57. (New) The method of claim 47, wherein the other medium is selected from the group consisting of SiF_4 and SiF_6

58. (New) The method of claim 47, wherein the other medium is a noble gas.

59. (New) The method of claim 47, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of 0.1:1 to 100:1.

60. (New) The method of claim 47, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of .5:1 to 10:1.

61. (New) The method of claim 47, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of 1:1 to 2:1.

62. (New) The method of claim 47, wherein the mask is an oxide mask.

63. (New) The method of claim 47, wherein the mask is a photoresist.

64. (New) The method of claim 47, wherein the etching medium is applied in an inductively coupled plasma etch.